

Developing Logical Thinking Skills through Peer Review Activities

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Developing Logical Thinking Skills through Peer Review Activities

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1. Introduction

In Japan, educational trainings for the development of logical thinking and/or critical thinking skills did not seem to be quite associated with compulsory education. However, these skills have become recognized as an essential part of liberal education and the development of those skills has been a current emphasis in higher education. Especially in pharmaceutical fields, courses frequently require students to engage in logical and/or critical thinking. The development of logical thinking skills can be of help in extracting the potential for creative thinking. As a promising way of developing logical thinking skills, the author decided to adopt the method using peer review activities, which was originally introduced as part of the process approach to teaching the first language writing in 1970's by P. Elbow, an American writing teacher [1]. Later, the method was recognized to be effective and became widely used by the second language teachers, and its effectiveness has been evaluated in the United States as well as some Asian countries up to now [2] ~ [15]. Although quite a few teachers of Japanese to foreigners in Japan have adopted this method, not so many teachers of English adopt it into their classes.

In the present study, the development of logical thinking skills along with the effects of peer review activity in the foreign language writing education will be evaluated. The author examined what effects the peer comments have on the students' production in English. Most of the previous researchers evaluated the improvement of the students' English abilities by looking into the surface errors such spelling, grammatical,

and syntax errors. In addition to those errors, the participants in this study were instructed to comment on the logicity of the compositions. They were also asked to write an essay in Japanese to see whether or not they could write essays logically in their native language. The main contribution to the field of learning sciences is that this study presents the educational impact on learners' achievement through peer review activities.

The remainder of this paper is organized as follows. A brief review on the peer review activities is in the next section. The purpose of this study is stated in the third section, and the fourth section shows the method of this experiment. The results and discussion are presented in the fifth section and the whole experiment is concluded in the final section.

2. Peer review activities in education

Peer review, also known as peer feedback or peer response, is a collaborative learning approach that will help develop logical thinking skills and insight into their own writings by making suggestions and commenting on each other's essays [14][15]. There are pros and cons upon the effects of peer review activities. Some studies indicate that peer review helps students to develop the skills to objectively and critically read their own essays [4][9][11]. It is also known that the training before the activity enhances both the quality and the quantity of peer comments [2][8]. On the other hand, some Asian researchers state that the students who are not confident in their language ability or wish to stay in harmony with their classmates feel reluctant about providing feedback to other's essays, so the effects of peer review activities can be considered limited [3][5][13].

In Japan the increasing number of language teachers of Japanese to foreigners are adopting peer review activities into their classes these days [16][17]. The method using peer review is said to be effective because the Westerners have been trained to think critically and debate in class since they were small children. Not many English teachers in Japan, however, adopt this collaborative learning approach because Japanese students are not accustomed to such activities. Therefore, its effects upon the

interaction of learners and the development of logical thinking skills have not been examined extensively thus far.

3. Purpose of this study

The purpose of this study is to examine what peer comments contribute to the improvement in the logicity as well as contents of the essays written in English. Furthermore, the author examines the essays written in Japanese to see if any difference in the logicity of the documents appears depending on languages used and intends to determine what prior instructions would enhance the effects of peer review activities.

4. Method of the experiment

The first experiment was conducted to see the effects of the peer review activity and the participants' logical thinking skills in the foreign language writings. In the second experiment the participants were asked to write essays in Japanese to determine whether or not the logical ability to construct an argument in the native language writing was maintained in the foreign language writing. Moreover, a questionnaire concerning peer review was conducted to determine the importance of the anonymity upon the implementation of the activity.

4.1 Essay writing in English

The participants of this experiment were a total of thirty-seven students who were enrolled in the six-year course at a pharmaceutical university in Tokyo. They were all fourth-year students and the number of male and female participants was eleven and twenty-six respectively. However, two students (1 male and 1 female) were eliminated from the data analysis because they did not attend the anonymous peer review activity. All of them had been educated in Japan and received at least nine years of instruction in English.

4.1.1 Procedures

A written assignment below was distributed to the participants on the very day of the class and they were asked to write an opinionative essay about traditional herbal medicines and the health insurance system in Japan. The instructor gave a brief explanation in Japanese about the assignment to make sure all the participants had a clear understanding of the instruction. They were instructed to write a logical essay with approximately two hundred words. The provided time for writing the essay was forty-five minutes, and they were allowed to use dictionaries. After the completion of the first draft, all essays were collected and typed by the instructor in a word form to make them unidentifiable. The peer review activity was conducted anonymously because the prior experiments suggested that quite a few participants felt uncomfortable in making comments on their classmates' essays.

Do you agree or disagree with the following statement? *It is not necessary to approve kampo medicines* for reimbursement under the health insurance.*

Use specific reasons and examples to support your opinion.

(*traditional herbal medicines)

A material provided for the experiment

One week later the participants underwent the peer review activity. The anonymous essays were distributed to the participants and twenty-five minutes were provided for the activity. They were permitted to write comments in both English and Japanese. The reviewers were told to underline any ambiguous sentences in the peer's essay while reading and were allowed to make any changes or suggestions they could make. Upon receiving the comments from the peer, all essays with the reviewer's comments were collected and handed to each author by the instructor. Then, another twenty minutes was provided to revise the essays.

4.1.2 Instructions prior to the peer review activity

The following written instructions were provided before the activity: point out any spelling, grammatical, and syntax errors; discover any omission of background information and inconsistency of logical structure; make any suggestions to improve the peer's essay; and state overall impressions. In order to make it easy for the participants to understand how to make comments, more specific instructions were also provided orally prior to the activity. They were instructed to pay attention to the third person singular present form, the sequence of tenses, and examine the adequacy of the reasons to support the writer's final statement.

4.2 Essay writing in Japanese

The participants were the same thirty-five students who took part in the previous experiment. They were asked to write an opinionative essay about private treatment and the health insurance system in twenty minutes. They were instructed to write a logical essay with approximately five hundred characters.

4.3 Questionnaire on peer review activities

A questionnaire concerning the anonymous peer review activity was conducted after a series of the experiments. They were asked to write about what they thought of the peer review activities. They were also asked to state their preference between identifiable and anonymous peer review activities.

5. Results and discussion

In this experiment, the author expected that the peer review activity would lead the essay writer to objectively read the essays and improve his or her own essay with the help of peer comments. Furthermore, she expected to find out whether or not each participant has a clear understanding of the logically structured essays by the results of a writing experiment in the native language.

The average word count of the first draft of the English essays was

180 words, the shortest essay contained 116 words, and the longest essay contained 226 words. The average character count of the Japanese essay was 547 characters, the shortest essay contained 234 characters, and the longest essay contained 754 characters. The correlation coefficient of the word counts of the English essays and the character counts of the Japanese essays was .24. This means that the language difference did not actually affect the length of the essays very much.

5.1 Essay writing in English

The common characteristic of the English essay was that the writer stated his or her own opinion in the first sentence. The essays with higher scores had a clear explanation about the difference of the traditional medicines and the western medicines as well as specific examples to support his or her opinions. The essays with lower scores not only contained few grounds to support his or her opinion, but contained many repeated sentences with the deliberate intention to increase the number of words.

The number of comments heavily increased when the peer review activity was conducted anonymously. This verified some importance of the anonymity upon the implementation of the activity. Within the same reviewers, however, there were a number of comments which did not have consistency in the comments as a whole. For instance, while there was a comment such as “I think this essay is good and easy to understand because the writer stuck to the original opinion,” the same reviewer gave a comment like “This essay was hard to read because the story changed without notice in the last paragraph.”

Fifteen out of the thirty-five participants (43%) pointed out spelling errors, twenty-seven (77%) gave at least one grammatical or syntax error, three (8.6%) gave some concrete measures to improve the organization of the writings, and twenty-two (63%) gave a hint to improve the essay. Although the participants were instructed to comment on the logicity of the essays, three (8.6%) made no mention of the logicity. Among the rest of the participants, three out of the thirty-two participants (9.4%) did not state any clear explanation for the comments. Regrettably, about a half

of the comments were not logically coherent.

Eighteen out of the thirty-five essays (51.4%) received better scores after the peer review activity, and fifteen of them (88%) incorporated peer comments into their writings. The logicity of some essays was improved just by replacing conjunctions suggested by their peers. Other essays were improved with the help of peers' specific comments such as "a lifestyle-related disease does not lead to the money issue, but the length of hospitalization does," or "you may want to explain more about why you chose the traditional herbal medicines for your allergies if you exemplify your own experience to support your opinion." Although some comments were far from good, many comments seemed quite helpful for the writers to improve their essays. Overall, the peer review activity had good effect on developing logical thinking skills.

Regrettably, there were three essays whose scores were lower than the first drafts. One essay deteriorated badly after the peer review. The first draft contained 163 words, while the revised draft contained only 100 words. The writer was confused by the peer's negative comments about his essay. The peer strongly denied and rejected every ground the writer stated with the intention to support his opinion. The writer submitted the revised essay with the comments that he was very confused by the peer comments and had no idea how to improve the essay. This implies the necessity of the training before the peer review activity so that the activity would not exert a bad influence upon the learning behavior.

5.2 Essay writing in Japanese

As for Japanese essays, there were ten out of thirty-five essays (28.6%) whose logicity was improper. Among those writers, only five of them (50%) wrote illogical English essays. The number of participants who maintained the appropriate logical development in both English and Japanese essays was seventeen (68%). The followings are the standards for the judgment on the appropriate logical development: the writer's opinion is clearly stated; the ground to support the writer's opinion is exemplified; and the content is coherent throughout the essay.

The essays with inappropriate logical development had a tendency to

change the opinions in the middle, contain some ambiguous expressions which would prevent readers from grasping the point at issue, or state a vague personal point of view at first but conclude the essay with a neutral ground. On the other hand, the essays with appropriate logical development tended to start with a clear personal point of view, provide specific examples and grounds to support the opinion, and end with a clear-cut conclusion.

5.3 Questionnaire on peer review activities

The results of the questionnaire after the whole experiment revealed that the anonymous peer review is far better than the identifiable peer review. Thirty-two out of the thirty-five participants (91%) answered “Conducting the peer review activity anonymously was better.” to the question “What do you think of the peer review activity conducted anonymously this time compared with the ones previously conducted identifiably?” Some stated that the anonymity helped them to be frank upon making comments because there was no need for them to worry about the writer’s feelings, while others said that they were pleased to receive far more comments in the anonymous peer review activity than in the identifiable peer review activities done previously. However, three participants (9%) chose “neither better nor worse.” One stated that he felt more comfortable in making comments when the writer of the essay was unidentifiable, but he got quite confused and felt frustrated by the peer comments because there was no way to refute an argument. The other two both stated that it did not make any difference because they were not so good at English that making comments to others’ essays was not only stressful but also embarrassing in either case.”

It was revealed that unfavorable results would be observed unless otherwise students develop individualized strategies for incorporating peer comments, for the revised essay of the above-mentioned participant was actually much worse than the first draft. The fact that the peer strongly disapproved of the author’s grounds to support his opinion exerted a bad influence upon the author’s attitude in revising the essay. Therefore, it is significant to train the participants in advance to acquire the skills to

make useful comments as well as the skills to decide what peer comments to incorporate into the essay during the revision by demonstrating both appropriate and inappropriate comments using sample essays with some common errors.

6. Conclusion

In this study, the author evaluated the development of logical thinking skills along with the effects of peer review activity in the foreign language writing education. It was revealed that anonymous peer review activities are effective in refining foreign language compositions and in developing logical thinking skills. This study is quite interesting and significant in that it showed that having the ability to logically write essays in the second language did not necessarily mean the person having the ability to logically write essays in the first language. However, there is room for improvement in the process of anonymous peer review activities. The author plans to make further analyses on peer comments so as to establish the method to develop logical thinking skills as well as the objective measurement and beneficial prior instructions for more effective peer review approach.

References

- [1] Elbow, P. (1988). *Writing Without Teachers*, 2nd ed. New York, NY: Oxford University Press.
- [2] Berg, E.C. (1999). The effects of trained peer response on ESL students' revision types and writing quality. *Journal of Second Language Writing*, 8(3), 215-241.
- [3] Carlson, J.G. & Nelson, G. L. (1996). Chinese students' perceptions of ESL peer response group interaction. *Journal of Second Language Writing*, 5(1), 1-19.
- [4] Chaudron, C. (1984). The effects of feedback on students' composition revisions. *RELC Journal*, 15(2), 1-14.
- [5] Connor, U. & Asenavage, K. (1994). Peer response groups in ESL

- writing classes: How much impact on revision? *Journal of Second Language Writing*, 3 (3), 257-276
- [6] Liu, J.& Hansen, J.G. (2002). *Peer Response in Second Language Writing Classrooms*. Ann Arbor, MI: The University of Michigan Press.
 - [7] Mendonça, C. & Johnson, K. E. (1994). Peer review negotiations: Revision activities in ESL writing instruction.” *TESOL Quarterly*, 28 (4), 745-69.
 - [8] Min, H.T. (2006) The effects of trained review on EFL students’ revision types and writing quality. *Journal of Second Language Writing*, 15, 118-141.
 - [9] Mittan, R. (1989). The peer review process: harnessing students’ communicative power. In D. Johnson & Roen, D. (Eds.), *Richness in Writing: Empowering ESL Students*, 207-219, New York: Longman.
 - [10] Nelson, G. & Murphy, J. P. (1993). Do L2 writers use peer comments in revising their drafts?” *TESOL Quarterly* 27(1), 135-142.
 - [11] Rollinson, P. (2005). Using peer feedback in the ESL writing class. *ELT Journal*, 59(1), 23-30.
 - [12] Tsui, A.B.M. & Ng, M. (2000). Do secondary L2 writers benefit from peer comments? *Journal of Second Language Writing*, 9(2), 147-170.
 - [13] Zhang, S. (1995). Re-examining the affective advantage of peer feedback in the ESL writing class. *Journal of Second Language Writing*, 4(3), 209-222.
 - [14] Yoshizawa, S. (2009). Effects of peer review activities in the EFL writing classrooms. *Hoshi Journal of General Education*, 27, 1-8.
 - [15] 吉澤小百合, 寺野隆雄, 吉川厚, (2010). 英作文授業におけるピアレビュー活動, 人工知能学会全国大会第 24 回論文集, JSAI10, 3F4-02, 1-4.
 - [16] 池田玲子・館岡洋子 (2007). 『ピア・ラーニング入門ー創造的な学びのデザインのために』 東京: ひつじ書房.
 - [17] 田中信行 (2009). 自律的な書き手を育成する活動としてのピア・レスポンスー学習者のピア・レスポンスへの適応過程の分析を通して, 『アカデミック・ジャパニーズ・ジャーナル』 1, 25-36.